Zadar Airport
Carbon Management Plan 2025

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ZADAR AIRPORT

Contents

1. Introduction

The transition of the aviation sector to net-zero carbon emissions by 2050 requires transformational change across the industry and the broader ecosystem. Achieving such changes will depend on strong leadership, robust partnerships, and collaborative efforts, supported by government policies, appropriate funding and investment, new technologies, operational innovation, and capacity building. Zadar Airport started its transition already in 2018, with the adoption of the Main Development Study of Zadar Airport (Study revised in 2021). This strategic document defines the guiding thread and a clear focus for a strategic turn and transformation into the **region's first green airport**. The realisation of this vision demands changes in business model and processes, implementation of new sustainable practices, and implementation of different projects that will contribute to reducing Zadar airport's carbon footprint. Key initiatives include investing in renewable energy (e.g., a photovoltaic plant), electrifying ground operations, and establishing the Quality and Environmental Protection Policy.

In 2021, the Zadar Airport implemented the Environmental Management System (ISO 14001:2015) – the scope of certification was services of aircraft, passengers, and freight ground handling. The ISO 14001 standard sets requirements related to the environmental management system, which include the planning, establishment, implementation, and monitoring of the environmental management system. In 2020, Zadar Airport joined the airport certification program as part of the Airport Carbon Accreditation program (ACI ACA), the primary goal of which is to reduce the negative impact of air traffic on the environment and climate. Zadar Airport is currently certified at Level 1 Mapping with ongoing efforts to upgrade to Level 2 Reduction. Other certifications were also implemented: Quality Management System QMS, ISO 9001:2008, ISO 27001:2013 Information Security, and ISO 22000:2018 Food Safety Management.

Environmental, Social, and Governance (ESG) principles that prioritise environmental issues, social issues, and corporate governance are in the first phase of implementation. Zadar Airport is committed to integrating ESG principles in every aspect of its operations. Through innovative technologies, responsible resource management, and fostering community partnerships, Zadar Airport aims to create a cleaner, safer, and more equitable travel experience. Zadar Airport's vision is to reduce its ecological footprint, contribute positively to the local community, and maintain the highest standards of ethical governance, ensuring leadership in sustainable aviation for years to come.

A "flagship project" in the journey to transform into the region's first green airport was the project *"Implementation of a fully electrified and greened aircraft ground handling system at the Zadar Airport"*. Project funded by Croatia's National Recovery and Resilience Plan 2021 – 2026, concerned the implementation of the following key activities:

- implementation of fixed connections for supplying electrical power to stationary aircraft with the necessary design and safety adaptations (without increasing the apron capacity);
- replacing diesel-fuelled mobile ground handling equipment with electrically powered units; 1. Electric towbarless tractor (pusher) – vehicle – 1 piece; 2. Remotely controlled electric aircraft pusher vehicle – 1 piece; 3. Electric vehicles for towing baggage carts – 5 pieces; 4. Self-propelled electric stairs – 1 piece; 5. Bus for transporting passengers to/from the aircraft – 1 piece;

- the construction of a 610kW photovoltaic powerplant.

During the project implementation period, an internal CO_2 emissions monitoring system was established. From August 2023, data were collected monthly based on the ACI ACA methodology (https://www.airportcarbonaccreditation.org/) and the Greenhouse Gas (GHG) Protocol, with a particular focus on the improvements made by the implemented project. An Action Plan for Climate Adaptation was also developed with a special focus on all project elements.

To ensure continuous measurement of the project's impact, Zadar Airport has implemented an upgraded CO_2 data collection system that remains operational after the project's completion. This system enables ongoing monitoring of CO_2 emissions and supports the airport's long-term sustainability efforts. This system defines evaluation parameters and procedures in accordance with regulations, controls implemented activities, determines compliance with defined parameters, and provides a report on compliance with DNSH principles and CO_2 emissions.

Finally, in 2025, the Zadar Airport Management Board decided to elaborate a Carbon Management Plan with the explicit aim of identifying the most adequate measures for further reducing the carbon footprint of Zadar Airport.

1.1 Purpose of the Carbon Management Plan

A decarbonization action plan should demonstrate how Zadar Airport Ltd, as an airport operator, plans on reaching its decarbonization targets (both interim and long-term) by engaging stakeholders, reviewing best practices, identifying opportunities and challenges, prioritising decarbonization strategies, and assessing economic and financial risks. Adoption of a Carbon Management Plan (CMP) for airports is essential for several environmental, regulatory, economic, and reputational reasons:

Environmental Responsibility

- HIGH CARBON FOOTPRINT: Airports are significant sources of greenhouse gas (GHG) emissions, due to aircraft operations, ground support equipment, terminal energy use, and surface transportation.
- CLIMATE CHANGE: Aviation contributes to global warming; reducing emissions aligns with international climate goals (e.g., Paris Agreement).

Regulatory Compliance

- NATIONAL AND INTERNATIONAL REGULATIONS: Many countries now mandate carbon reporting and reduction for large infrastructure. International Civil Aviation Organization (ICAO) and local governments may impose limits or require offsetting measures.
- CARBON ACCREDITATION SCHEMES: Programs like ACI ACA require a Carbon management strategy to reach higher levels of certification.

Economic Efficiency

- ENERGY AND COST SAVINGS: CMPs often include energy efficiency measures that reduce operational costs.
- PENALTIES/CARBON TAXES AVOIDANCE: Reducing emissions helps airports avoid potential future carbon taxes or penalties.

Operational Planning

- RISK MANAGEMENT: Anticipating and preparing for stricter regulations, fuel price volatility, and climate-related disruptions.
- INFRASTRUCTURE DECISIONS: Guides sustainable development (e.g., designing energy-efficient terminals or using electric ground vehicles).

Stakeholder Expectations

- AIRLINES AND PASSENGERS: Increasing demand for sustainable travel options.
- INVESTORS AND PARTNERS: ESG (Environmental, Social, Governance) performance is a growing priority in investment decisions.
- COMMUNITY IMPACT: Local communities expect airports to minimize their environmental impact, including noise and emissions reductions.

Reputation and Leadership

- BRAND VALUE: Being a green airport enhances public image.
- INDUSTRY LEADERSHIP: Demonstrates commitment and leadership within the aviation industry.

A CMP for airports is not just an environmental measure — it's a strategic tool that helps align with regulations, reduce costs, improve reputation, and future-proof airport operations in a carbon-constrained world.

1.2 Profile of Zadar Airport

Zadar Airport is an international airport of strategic importance to the Republic of Croatia and of particular significance to the city of Zadar. Located in Zemunik Donji, just 10 km from the city centre and near the Zagreb–Split motorway, the airport is classified as a Category 4D facility under ICAO standards. It plays a crucial role in supporting tourism, a key economic driver for the Zadar region. As a central entry point for foreign visitors, Zadar Airport is essential to the city's tourism sector and, by extension, to the broader regional economy. The airport is operated by Zadar Airport Ltd, a company jointly owned by the Republic of Croatia (55%), Zadar County (20%), the City of Zadar (20%), and the Municipality of Zemunik Donji (5%).

Zadar Airport is a dual-use facility that serves both civilian and military purposes. It hosts the headquarters of the Croatian Air Force's 93rd Zadar Air Base – Colonel Mirko Vukušić Barracks. An

agreement between Zadar Airport Ltd and the 93rd Air Base allows indefinite civil aviation use of the military infrastructure.

Zadar Airport is the only airport in Croatia with two runways, arranged in an open "V" configuration, supported by a network of taxiways. Thanks to favourable weather conditions, it operates nearly year-round—up to 320 days annually—only limited by fog. The airport supports three core functions:

- Civil Aviation: Passenger and cargo operations, with a sharp increase during the tourist season (May–October). Freight traffic is projected to grow alongside regional economic development.
- Military Operations: Year-round training and air force activity.
- Emergency Services: Hosting Croatia's firefighting aircraft and Search and Rescue (SAR) units, especially active during the fire season.

Driven by tourism growth and increasing international interest, Zadar Airport is expected to see a continued rise in passenger numbers and flight operations. Its dual-runway setup positions it as one of the most promising Croatian airports for expansion. While current operations focus on short- and medium-haul traffic, there is growing interest in establishing long-haul flights with wide-body aircraft, particularly from China (e.g., Hainan Airlines and China Southern Airlines).

However, the airport's existing infrastructure cannot handle ICAO Category "E" aircraft (e.g., wide-body jets) without restrictions. Current limitations include insufficient runway length, inadequate pavement strength, narrow taxiways, and limited apron and terminal capacity. These constraints restrict aircraft take-off and landing weights, often requiring reduced passenger loads.

A significant growth opportunity stems from the expected designation of Gaženica Seaport as a home port for large cruise ships. The concession agreement granted to Zadar International Port Operations Ltd for 20 years mandates the development of Gaženica as a cruise departure port. Beginning in 2020, passenger flows from cruise ships—expected to include at least one ship weekly with 1.500–2.000 passengers—will likely depend on Zadar Airport for air transfers. This scenario mirrors the operational model in Dubrovnik, where most cruise passengers arrive by air on the same day.

Integrating air and sea transport in Zadar demands coordinated planning and investment from Zadar Airport, the City of Zadar, and Zadar County. This includes airside and landside infrastructure improvements to support rising traffic volumes.

Geotechnical investigations have revealed that much of the airport's current infrastructure is suboptimal and requires reconstruction. Key findings include:

- Runway 13-31[1] (USS 13-31): Temporarily rehabilitated in 2015 to restore safe operations, but without increasing its structural capacity.
- Taxiways and apron: Repaired between 2013 and 2017, but many sections still require complete reconstruction.
- Load-bearing capacity: Existing pavement structures are inadequate for heavy aircraft. Thick asphalt overlays sit on a thin base layer, with poor subsoil characteristics.

[1] Runway markings were changed from 14-32 to 13-31 upon Decision on the execution of the change of runway markings 14-32 to 13-31 (Croatian Civil Aviation Agency; 2019)

- Taxiway configuration: Width and layout do not meet standards for larger aircraft.
- Apron: Needs reconstruction, including new pavement and a stormwater drainage system to replace outdated infrastructure that currently hampers aircraft manoeuvring.

To accommodate increased commercial aviation activity and future wide-body operations, the airport requires:

- Runway and taxiway reconstruction with increased load-bearing capacity.
- Expanded aircraft apron for Categories C–E.
- Improved terminal facilities and support infrastructure.

This investment is essential to unlocking the full potential of Zadar Airport as a regional air transport hub capable of supporting long-haul travel, increased cargo traffic, and seamless cruise ship-airport integration. However, investing in airport infrastructure, like at Zadar Airport, has both opportunities and challenges when it comes to carbon emissions and climate impact. Therefore, the present Carbon management plan should provide recommendations for a greener Zadar Airport expansion in the short-term, medium-term, and long-term. This Plan has a clear objective to systematically reduce and manage carbon emissions at Zadar Airport through targeted infrastructure, operational, and policy measures – supporting Croatia's climate commitments, EU Green Deal targets, and the airport's long-term growth strategy.

1.3 Policy Drivers

The Croatian legal and strategic framework for carbon management at airports and air traffic is shaped by both European Union regulations and national laws, as well as international agreements that Croatia adheres to as an EU member state. The following table gives an overview of the key legal and strategic frameworks that **Zadar Airport** considers when developing its CMP.

International agreements, EU regulations, and industry standards	
Paris Agreement (COP21)	Croatia, as an EU member state, is bound by the Paris Agreement (2015), which commits countries to limit global temperature rise to well below 2°C, aiming for 1.5°C. Under the Paris Agreement, countries must set Nationally Determined Contributions (NDCs), which outline their targets for reducing greenhouse gas emissions. Croatia's NDC includes ambitious carbon reduction goals across all sectors, including aviation.
European Union Emissions Trading System (EU ETS)	The EU Emissions Trading System is the world's first carbon market and among the largest ones globally. It requires polluters to pay for their GHG emissions. As part of the EU Climate Policy, the EU ETS, among others, regulates emissions from aviation within the EU. Aviation operators flying in the European Economic Area (EEA) are required to purchase carbon allowances for their emissions, which include emissions from both domestic and international flights. This system encourages airlines to reduce emissions and invest in fuel-efficient technologies and Sustainable Aviation Fuel (SAF).
European Green Deal (EGD)	The European Green Deal is the EU's roadmap for becoming carbon-neutral by 2050. The Fit for 55 package, a key part of the Green Deal, sets the 2030 climate targets, including a 55% reduction in net GHG emissions compared to 1990 levels. This includes aviation emissions. The EGD also promotes sustainable mobility (including aviation), focusing on improving energy efficiency,

	integrating low-carbon technologies, and transitioning towards renewable energy sources at airports.
EU Taxonomy for Sustainable Activities	The EU Taxonomy is a classification system that defines sustainable economic activities and promotes environmentally friendly investments. It sets clear criteria to prevent greenwashing and ensures alignment with EU environmental objectives, supporting sustainable finance and growth across Europe. Airports must comply with these sustainable finance regulations when planning infrastructure and operational investments to align with carbon reduction targets.
ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)	The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) is a global offsetting scheme, whereby airlines and other aircraft operators offset any growth in CO_2 emissions above 85% of 2019 levels. This means that aviation's net CO_2 emissions are stabilised, while other emissions reduction measures, such as technology, sustainable aviation fuel, operations, and infrastructure options, are pursued. CORSIA only applies to international flights. Domestic emissions fall under the scope of the UNFCCC and are covered by the Paris Agreement.
ACI Europe – Airport Carbon Accreditation (ACI ACA)	ACI Europe – Airport Carbon Accreditation (ACA) is a voluntary but industry-leading standard many European airports have adopted. The ACI ACA is a certification system for airports to measure and improve their environmental performance, with levels from Level 1 Mapping emissions to Level 5: Net Zero operations. It encourages carbon footprint reporting, energy efficiency implementation, renewables use, etc. Zadar Airport is certified at ACI ACA Level 1 "Mapping" and preparing for Level 2 "Reduction". This certification will improve Zadar airport's credibility and sustainability credentials and position it for green funding.
United Nations Sustainable Development Goals (UN SDGs)	The 2030 Agenda for Sustainable Development, adopted by all United Nations members in 2015, created 17 Sustainable Development Goals. They are a universal call to action to end poverty, protect the planet, and ensure that by 2030, all people enjoy peace and prosperity. The 17 SDGs are integrated—they recognise that action in one area will affect outcomes in others, and that development must balance social, economic, and environmental sustainability.
Croatian National Legal and Strategic Framework	
Environmental Protection Act (Official Gazette 80/13, 153/13, 78/15, 12/18, 118/18)	This Act is the cornerstone of Croatia's environmental protection legislation. It establishes requirements for: • Air quality management and pollutant emissions controls. • Implementation of environmental management systems at airports. • Climate change mitigation, including reducing CO_2 emissions from airport operations and related activities.
Act on Climate Change and the Protection of the Ozone Layer (Official Gazette 67/25)	The "Act on Climate Change and the Protection of the Ozone Layer" in Croatia is a national law that transposes and implements EU climate legislation, including the Montreal Protocol. It sets a framework for long-term climate strategies, adaptation strategies, and action plans to mitigate climate change and protect the ozone layer.
Climate Change Adaptation Strategy in the Republic of Croatia for the period until 2040 with a view to 2070 (Official Gazette 46/2020)	It is the first strategic document that provides an assessment of climate change for Croatia, including possible impacts and vulnerability assessments. The strategy considers the following climatic parameters: precipitation, snow cover, surface runoff, air temperature, extreme weather conditions, wind, evapotranspiration, humidity, soil moisture, solar radiation, and mean sea level.

The Integrated National Energy and Climate Plan for the Republic of Croatia for 2021-2030 (NECP)	NECP builds on the existing national strategies and plans and will enable the implementation of the long-term Low-Carbon Development Strategy of the Republic of Croatia until 2030, with an outlook to 2050 and also put Croatia on the path to a substantial reduction of GHG emissions following the energy and climate legislative framework "Fit for 55". NECP focuses on the targets to be achieved by 2030, including reducing GHG emissions, increasing production and consumption of energy from renewable sources, energy efficiency, and electricity interconnection with the comprehensive strengthening of resistance to climate change. The plan sets out specific measures for decarbonising the transport sector, including air transport, through increasing the use of SAF and promoting green transport infrastructure at airports.
Low-carbon Development Strategy of the Republic of Croatia until 2030 with a view to 2050 (Official Gazette 63/21)	The "Low-carbon Development Strategy of the Republic of Croatia until 2030 with a view to 2050" is an overarching document guiding Croatia's transition towards a low-carbon economy and efficient resource use in pursuing sustainable development. It outlines three scenarios demonstrating the potential for reducing GHG emissions in Croatia, with the implementation of policies and measures across all sectors, particularly energy, transport, construction, industry, agriculture, and waste management.
Croatian Transport Development Strategy (2017-2030)	The Transport Development Strategy provides a framework for sustainable development in transport infrastructure, including aviation. It highlights the importance of green airports, low-carbon solutions for air traffic, and energy efficiency in transportation hubs. Key goals include reducing aviation-related emissions and promoting eco-friendly technologies at Croatian airports.
Regulations on Aviation Emissions and Energy Use	
Aircraft Noise and Emissions Directive (EU) 2016/2284	This Directive regulates the monitoring and reduction of air pollutant emissions (NO_x, SO_x, etc.) from aircraft in the EU. It also outlines measures to reduce aircraft noise and its impact on local communities around airports.
EU Directive on the Deployment of Alternative Fuels Infrastructure (2014/94/EU)	This Directive aims to ensure the widespread deployment of alternative fuel infrastructure, including electric vehicle charging stations and SAF infrastructure at airports.

In alignment with EU and Croatian climate goals, Zadar Airport can leverage the EU ETS, national climate regulations, and green funding to create a comprehensive carbon management strategy. By focusing on reducing Scope 1, 2, and 3 emissions, transitioning to green energy and electric ground support equipment, and collaborating with stakeholders across the aviation value chain, Zadar Airport can significantly contribute to both local and global climate goals.

1.4 Airport Carbon Accreditation

Airport Carbon Accreditation[2] is the only institutionally endorsed, global carbon management certification programme for airports. It independently assesses and recognises the efforts of airports to manage and reduce their carbon emissions through 7 levels of certification:

- **Level 1 Mapping:** Airports are required to measure and inventory their carbon footprint.
- **Level 2 Reduction:** Airports are required to set up their carbon management and progress towards a reduced carbon footprint.

[2] https://www.airportcarbonaccreditation.org/

- **Level 3 Optimisation:** Airports are required to engage their third parties in carbon footprint management. Third parties include airlines and various service providers, such as independent ground handlers, catering companies, air traffic control, and others working on the airport site. It also involves engagement on surface access modes (road, rail) with authorities and users.
- **Level 3+ Neutrality:** Airports are required to compensate for their remaining carbon emissions that cannot be reduced by other means by offsetting.
- **Level 4 Transformation:** Airports are required to align their carbon management ambition with the global climate goals and transform their operations with absolute emissions reductions in mind, while also strengthening their stakeholder engagement.
- **Level 4+ Transition:** Airports are required to compensate for their remaining carbon emissions by offsetting.
- **Level 5**: It is the topmost level in the Airport Carbon Accreditation programme, introduced in 2023, setting high standards for airports to significantly reduce their absolute carbon emissions. In addition, airports at this level must collaborate with their entire ecosystem, including employees, suppliers, business partners, airlines, and other companies and third parties active on the airport site, to significantly contribute to emissions reduction, aligning with the broader Net Zero commitments of the sector.

Zadar Airport is certified at ACI ACA Level 1 “Mapping” and is preparing for Level 2 “Reduction”. Since 2020, Zadar Airport has been successfully renewing its Level 1 accreditation. In 2023 and 2024, substantial infrastructure and equipment improvements were made, giving the airport the necessary “push” towards reducing GHG emissions. Since August 2023, monthly measurements for Scopes 1 and 2 have been documented, allowing for timely adjustments to the impact of CO_2 emissions. It is planned that, in 2026, Zadar Airport will be eligible for upgrade to Level 2 “Reduction”.

1.5 Government targets

On March 26, 2025, the Government of the Republic of Croatia adopted the revised Integrated National Energy and Climate Plan (NECP) of the Republic of Croatia for the period from 2021 to 2030. The NECP was revised to enable the implementation of the new EU legislative package “Fit for 55”, ensuring that Croatia makes a proportionate contribution to the joint EU target of reducing GHG emissions by 55% by 2030 compared to 1990 levels. The long-term goal of both Croatia and the EU is to achieve climate neutrality by 2050.

Key NECP indicators and targets for 2030:

Indicator	**Target**
Reduction of GHG emissions in the ETS sector (compared to 2005)	-62%
Reduction of GHG emissions in non-ETS sectors (compared to 2005)	-16.7%
Net GHG removals in 2030	-5,527 kt CO_2e
Share of renewable energy sources (RES) in gross final energy consumption	42.5%

Share of RES in final energy consumption in transport	24.6%
Primary energy consumption (total energy use excluding non-energy use)	336.9 PJ (8.05 Mtoe)
Final energy consumption	246.2 PJ (5.88 Mtoe)

The Climate Change and Ozone Layer Protection Act defines the NECP as an implementation document of the Long-Term Low-Carbon Development Strategy, with the ministry responsible for energy designated as the lead authority for its preparation, in cooperation with the ministry responsible for climate.

The NECP has been developed and revised in accordance with the EU Regulation on the Governance of the Energy Union and Climate Action (Regulation (EU) 2018/1999) and plays a key role in achieving the shared ambition of climate neutrality, as adopted in the European Climate Law (Regulation (EU) 2021/1119). Regulation (EU) 2018/1999 provides for regular updates of national plans, and in light of significant changes in the energy and economic sectors, the Republic of Croatia has carried out a comprehensive revision of its Integrated National Energy and Climate Plan.

2. Carbon Emissions Management

2.1 Scope and Boundaries – Carbon Emission Sources

The GHG Protocol categorises carbon emissions as scope 1 and 2 as defined below.

Scope 1 Emissions: Direct GHG emissions occur from sources owned or controlled by the organisation, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.

Scope 2 Emissions: Electricity – indirect GHG emissions arise from generating purchased electricity that the organization consumes.

Zadar Airport is taking responsibility for all the services at the airport, such as: services in aircraft, passengers, baggage, cargo and mail handling, parking and advertising, but not the fuel supply. Aircraft fuel supply is carried by the independent company called "INA - Industrija nafte d.d.". The operator takes care of the whole infrastructure (apron, runway, buildings, roads, etc., the main electrical supply, the main water supply, and waste management at the airport). This way, all electrical and water consumption throughout the airport is controlled.

In Table 1, emission sources, the scope, and the department responsible for Zadar Airport are listed.

Description of Emission Sources	**Emission Scope**	**Internal department or third party with responsibility for the emission source**
Boilers for heating water	1	Technical, development, and maintenance division - Electrical department
Generators	1	Technical, development, and maintenance division - Electrical department
Refrigeration and air conditioning equipment	1	Technical, development, and maintenance division - Electrical department
Firefighting exercises	1	Ground operations management - Fire and rescue department
GSE & company cars	1	Technical, development, and maintenance division - Maintenance department
Wastewater management	1	Technical, development, and maintenance division
Airport de-icing	1	Ground operations management - Fire and rescue department
Purchased electricity	2	Technical, development, and maintenance division - Electrical department

Table 1. Emission sources, emission scope, and the responsible department for Zadar Airport

2.2 Carbon Footprint Baseline

Zadar Airport's carbon footprint is reported in line with the guidance from the Greenhouse Gas Protocol[3] and includes the emission sources 1 and 2, as Table 1 lists.

In line with the GHG Protocol, Zadar Airport's carbon footprint is reported as tonnes of carbon dioxide equivalent (tCO2e), which is the universal measurement of emissions from six greenhouse gases (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6).

2.3 Carbon Footprint Profile

Zadar Airport's carbon footprint baseline is 2021, which was 575,24 tonnes of carbon dioxide equivalent (tCO_2e) location-based and 796,63 tCO_2e market-based (Figure 1 and 2). Scope 2 accounts for 76% and 83% for location-based and market-based tCO_2e calculations, respectively.

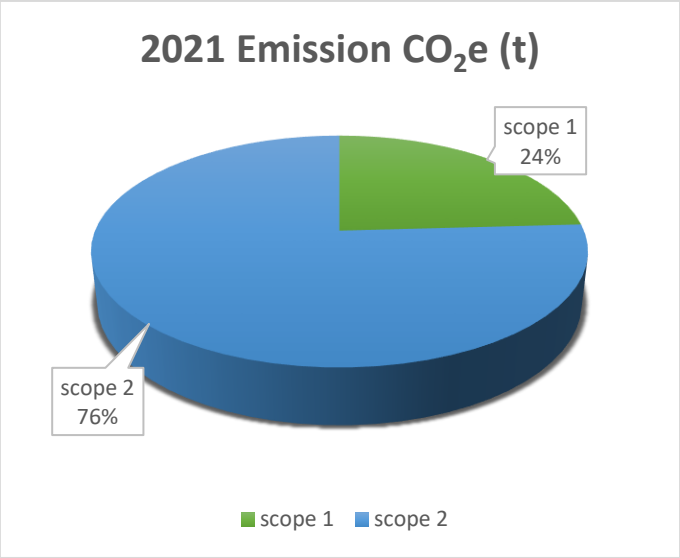

Figure 1. 2021 Emission CO_2e (t) – location-based

[3] https://ghgprotocol.org/

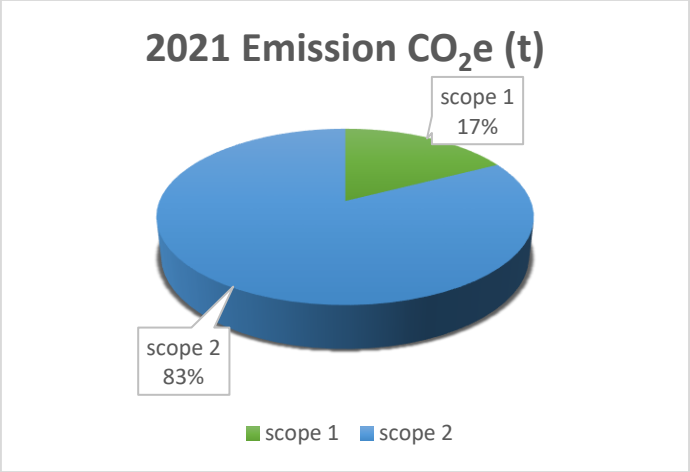

Figure 2. 2021 Emission CO_2e (t) – market-based

Year 2021 was still the year affected by COVID-19. Although the flights started to operate, and operations were even higher in some months than in pre-COVID years (2018 and 2019), they were still not in full scope (Figure 3). Since the 2021 baseline, Zadar Airport has increased emissions in scopes 1 and 2 in absolute values. However, a reduction trend can be seen in scope 1 from 2022 to 2024 (Figure 4). Specifically, in 2024, the emissions within Zadar Airport's control in the scope 1 category (Table 2) were 31% less than in 2022 (200,37 tCO_2e). This can be attributed to the reduction in emissions associated with airport-owned operational vehicles, whereby electric vehicles (ground service equipment – GSE) have replaced diesel vehicles.

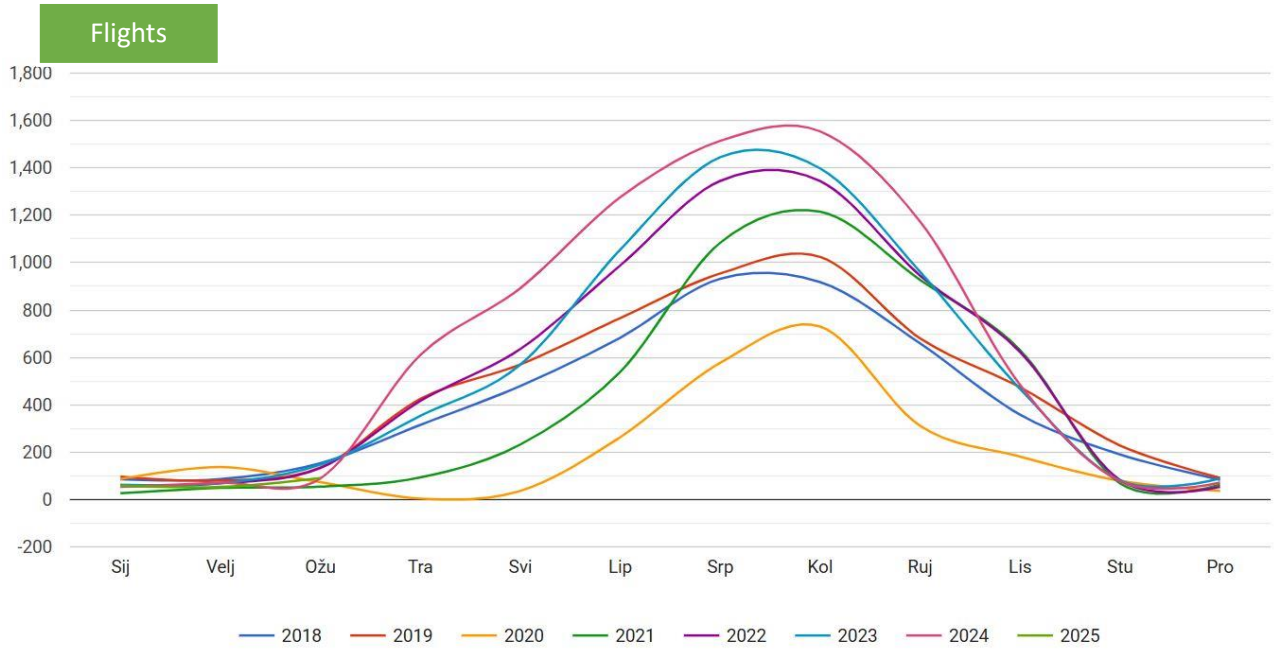

Figure 3. Number of flights throughout the years (2018 – 2024)

DIRECT EMISSIONS	2022 (tCO_2e)	2024 (tCO_2e)	Percentage increase/decrease
Stationary sources (3 gas boilers for water heating, firefighting exercises, 2 generators at the apron)	89,77	9,69	-89,21%
Mobile sources (GSE, including burner, equipment for manual work at the apron, official vehicles)	194,05	180,61	-6,93%
Process emissions – wastewater	6,60	10,08	+52,73%
TOTAL	**290,42**	**200,38**	**-31,00%**

Table 2. CO2e (t) emissions absolute values' comparisons 2022 vs 2024

During the period 2021 – 2023, purchased electricity started to show a decrease in 2023 (Figure 4). However, due to a significant investment through the greening and electrification of the Zadar Airport project, electricity demand was higher in 2024, compared to the three-year period 2021 – 2023.

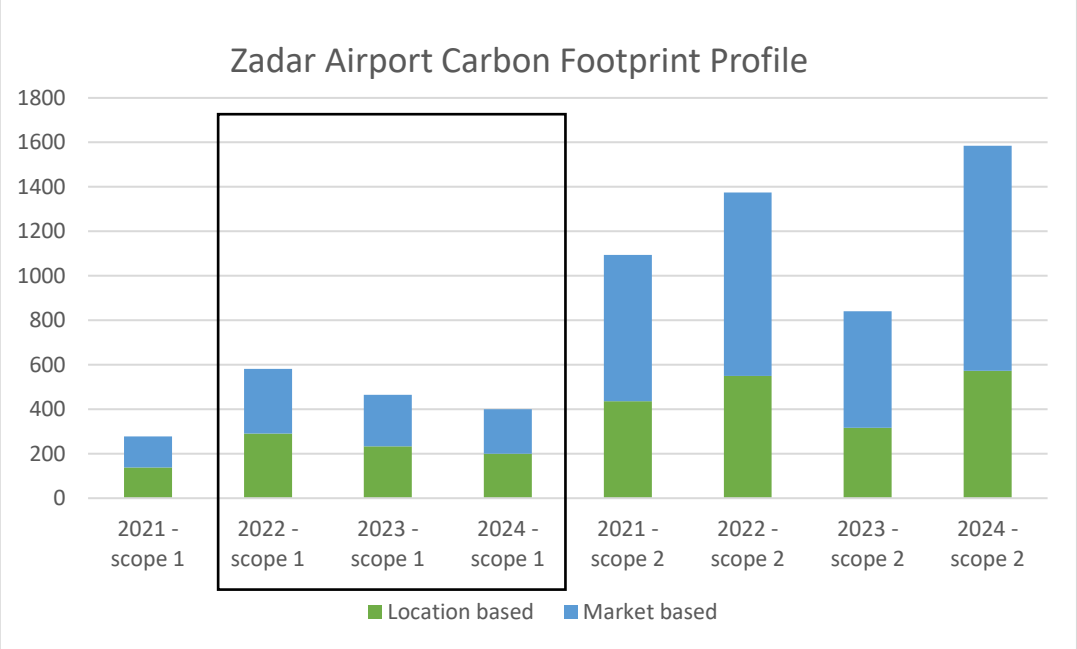

Figure 4. Zadar Airport Carbon Footprint Profile 2021 – 2024

When considering relative values of carbon emissions, i.e., tCO_2e emissions per passenger, there has been a reduction in tCO_2e emissions in both scopes 1 and 2 starting from the baseline year, 2021, with values of 0,00027 tCO_2e for scope 1, and for scope 2, 0,000851 tCO_2e location-based, and 0,001282 tCO_2e market-based (Figure 5). A slight increase in carbon emissions per passenger in scope 2 can be seen in 2024. However, in 2024, significant investment in work at the apron was made, which required higher electricity demands, thus the slight increase is visible.

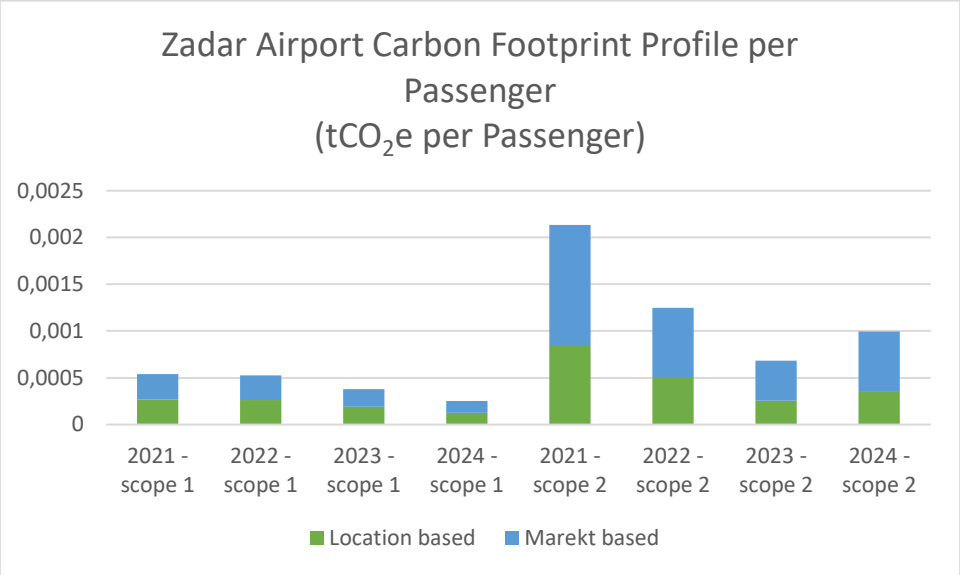

Figure 5. Zadar Airport carbon footprint per passenger (tCO_2e per passenger) 2021 – 2024

2.4 Zadar Airport targets

Zadar Airport's carbon emissions reduction target includes the reduction of tCO_2e emissions per passenger by 20% below 2021 levels by 2030 in both scope 1 and 2 (location-based and market-based calculations).

In order to meet the target, Zadar Airport will implement several initiatives/projects. The main initiative includes the development of the Passenger Terminal Building with a photovoltaic plant – phases 4-6. The objective is to achieve high energy efficiency standards and meet the requirements for the A+ energy class, as well as the criteria for designing and constructing a nearly zero-energy building (nZEB).

Solar power plant with mini wind turbines

Triangular photovoltaic solar panels will be installed on each hexagonal structural module to generate electricity from the sun. **Around 1250 modules are planned**, resulting in a nominal power output of approximately **1500 kW for the solar power plant**.

Integrated hybrid system

Vertical-axis wind turbines with a vertical rotor, with a nominal capacity of approximately **5 kW each**. Around **18 locations** would add about **90 kW of total installed power to the solar power plant**. When combined with thermal-technical systems, it would meet all or nearly all of the airport's energy needs.

Mechanical thermal ventilation of spaces

The mechanical ventilation system of the building includes heat recovery from exhaust air with a **minimum efficiency of 80%.** All systems must achieve high reliability and safety, particularly thermal-technical installations.

3. Governance, Communications, and Auditing of the Carbon Footprint

3.1 Governance Overview

To ensure effective and ongoing ownership of the Carbon Management Plan, it is important to have a fully defined governance structure. Zadar Airport will adopt the following organisational framework that supports CMP implementation, including implementation of the projects aimed to reduce emissions, training and communication for employees, and increasing the awareness of stakeholders (employees, suppliers, franchisees, and passengers), as well as self-assessment and auditing procedures.

Therefore, a dedicated CMP Steering Committee shall be formed, consisting of the following members from the following sectors:

- Zadar Airport Ltd director
- Traffic operations sector (1 person)
- Technical, development, and maintenance sector (2 people)
- Finance and accounting Sector (1 person)

The main steering committee's roles include the following responsibilities:

- Approve the CMP strategy and budget
- Set targets aligned with ACA
- Monitor the progress of implementation, including monitoring and measuring achieved savings
- Prepare and approve annual carbon reports
- Develop emissions reduction projects
- Engage with stakeholders and regulators

Meeting Frequency: Quarterly.

In the future phase of CMP implementation, it is advised that an External Stakeholder Advisory Forum be established to play the role of transparent communication and partnership-building. Possible participants could be:

- Local government (Zadar City)
- NGOs
- Airline partners
- Ground transport providers
- Local community representatives

The purpose of this Advisory Forum is to share CMP progress, gather feedback, and promote joint decarbonization efforts (e.g., sustainable transport access).

3.2 Communicating Zadar Airport's Carbon Footprint and Carbon Reduction Initiatives

Effective communication is a vital tool for the successful implementation of carbon management plans, fostering trust, enhancing employee and stakeholder engagement, reducing conflict, and boosting productivity across various projects and initiatives. It allows the CMP Steering Committee to convey goals, expectations, and feedback, ensuring everyone is aligned towards common objectives. Furthermore, communication fosters stronger professional relationships and supports business growth.

Consequently, the success of an airport's CMP hinges on the active participation and competence of both employees and external stakeholders. When evaluating training and informational needs, the airport should consider the following key areas:

Role-based knowledge and skills:

- **Traffic operational staff:** Training on energy-efficient equipment use, waste management, sustainable fuelling practices, etc.
- **Technical, development and maintenance staff:** Skills in low-carbon technologies (e.g., heating, ventilation and air conditioning – HVAC optimisation, LED systems, electric vehicles maintenance), low-emission construction trends (e.g., low-carbon materials, circular economy principles, optimising construction processes to minimise waste and energy consumption), etc.
- **Procurement/Finance:** Understanding green procurement standards and life-cycle cost analysis.
- **Management:** Awareness of climate risk, compliance obligations, and strategic leadership on sustainability.

Awareness-raising activities at all levels, from staff to local stakeholders, are essential.

Community and stakeholders know the airport well, and some of the measures that will be implemented might have an impact on their activities. Therefore, involving and including them in the journey as early as possible is highly recommended. This can be done through workshops and consultative meetings with key stakeholders, including airport employees, airlines, ground handlers, energy providers, and organisations such as local governments and transport authorities.

General staff should comprehend the airport's carbon reduction goals, key milestones, and progress reporting requirements. All airport personnel and direct stakeholders must recognise how their behaviour impacts emissions (e.g., lighting use). Therefore, various tailored workshops should be implemented to encourage behavioural change. However, the prerequisite for this is identifying where behaviour contributes to emissions (e.g., heating and cooling habits, vehicle use). In addition to workshops, using signage and feedback systems (e.g., energy dashboards) to reinforce desired actions is advisable.

When tailoring the workshops and training, it is necessary to ensure compliance with:

- ACI Airport Carbon Accreditation

- ISO 14001 / 50001
- EU climate legislation (e.g., Fit for 55, EU ETS)

Training, among others, should be adjusted based on the level of understanding of the business risks presented by climate change and on job-specific knowledge and skills required by those whose activities directly impact the airport's carbon footprint.

Potential initiatives to enhance awareness include:

- Making the Carbon Management Plan publicly available and easily accessible to all employees, visitors, and external stakeholders.
- Launching awareness campaigns focused on energy efficiency and carbon reduction.
- Providing regular updates and reports via the airport's website and social media platforms.
- Highlighting the airport's low-carbon commitment in external media.
- Embedding low-carbon values into staff onboarding processes, including the distribution of clear written guidelines.
- Offering training to both existing employees and key partners/stakeholders. This should include diverse delivery methods such as classroom sessions, online modules, posters, newsletters, and workshops. Training content should be tailored to individual roles, language proficiency, and literacy levels, with feedback collected to improve future sessions.
- Integrating carbon reduction targets into staff performance goals and reviewing progress during annual performance evaluations.

3.3 Audits and Assessments

Even prior to adopting the current Carbon Management Plan, Zadar Airport had already implemented carbon footprint monitoring following ACI ACA requirements. Additionally, CO_2 emission measurements and DNSH principles related to the project "Implementation of a Fully Electrified and Green Aircraft Ground Handling System at Zadar Airport" were implemented to verify the achievement of planned results.

The Carbon Management Plan is a dynamic, evolving document, expected to be updated to reflect changes in the organisation's infrastructure and the realisation of planning assumptions. To ensure it continues to support the achievement of targeted carbon reductions effectively, the plan will undergo an evaluation each year. The CMP Steering Committee will coordinate this process with the support of external experts.

The following areas of the CMP will be subject to annual review:

- Progress towards the overall carbon reduction target, including CO_2 savings against the target and quantifiable benefits
- Progress with identified carbon reduction projects
- Financial savings achieved as a result of carbon reduction projects
- Costs of the programme and wider benefits

- Stakeholder engagement, and
- Risk register

The data collection for reporting will be based on the ACI ACA requirements. For reporting purposes, a different set of tools will be used, depending on the type of assessment to be made.

Audits and Assessments for Zadar Airport's Carbon Management Plan

Type of Assessment	Purpose	Methodology / Standard	Frequency	Responsibility	Tool
Carbon Footprint Assessment (GHG Inventory)	Quantify Scope 1 and 2	Based on the ACI ACA, or the GHG Protocol	Annually	Sustainability Manager, with possible third-party verification	Carbon assessment tool, carbon accounting software (e.g., ACERT tool)
Energy Audit	Identify energy inefficiencies and opportunities for savings	Aligned with ISO 50001 (if applicable) or EU Energy Efficiency Directive	Every 4 years (or more frequently for major assets)	Engineering team or external energy consultants	Energy Management Self-Assessment Tool
Internal CMP Audit	Evaluate the effectiveness of the CMP and compliance with internal policies	Implementation status, policy adherence, staff awareness, and target alignment	Bi-annually	Carbon Management Working Group (CMWG)	Internal tools
ACI ACA Verification	Achieve and maintain ACI's ACA certification (e.g., Level 2 – Reduction or Level 3 – Optimization)	Based on the ACI ACA and GHG Protocol	Annual submission with third-party verification, every second year if Zadar Airport remains at the same level	Sustainability Manager, in coordination with the ACI-approved verifier	ACERT tool
Stakeholder Feedback Assessments	Assess engagement effectiveness and collect input from airlines, tenants, ground handlers, and the public	Surveys, workshops, and interviews	Annually or following major CMP milestones	CMSC or Communications Team	Internal tools
Training Effectiveness Assessment	Evaluate whether training	Pre/post-training surveys, tests,	After each training cycle	HR and Sustainability leads	Internal tools

	programs lead to measurable knowledge and behaviour change	and feedback forms			
Regulatory Compliance Review	Ensure conformity with EU and Croatian environmental regulations (e.g., EU ETS, Fit for 55).	Desk research	Annually or as regulation changes	Legal/Compliance team in coordination with Sustainability	Internal tools
Management Review	Top-level review of CMP performance and strategic direction	Audit results, KPI performance, stakeholder feedback	Annually (as part of ISO 14001/EMS or CMP review cycle)	Carbon Management Steering Committee (CMSC)	Internal tools

4. Carbon Emissions Management Projects and Initiatives – Implementation Plan

In 2023 and 2024, Zadar Airport implemented an investment project, *"Implementation of a fully electrified and greened aircraft ground handling system at the Zadar Airport".*

Table 3 details the carbon footprint for Zadar Airport in 2024 for scopes 1 and 2.

	Location-based emissions (tCO_2e)	**Market-based emissions (tCO_2e)**
Scope 1		
Boilers for heating water	7,13	7,13
Generators	2,56	2,56
Refrigeration and air conditioning equipment	0	0
Firefighting exercises	0	0
GSE & company cars	180,61	180,61
Wastewater management	10,08	10,08
Airport de-icing	0	0
Scope 2		
Purchased electricity	572,28	1.012,15

Table 3. 2024 Zadar Airport Carbon Footprint

The following Figures (6 and 7) present a percentage share for scope 1 emissions.

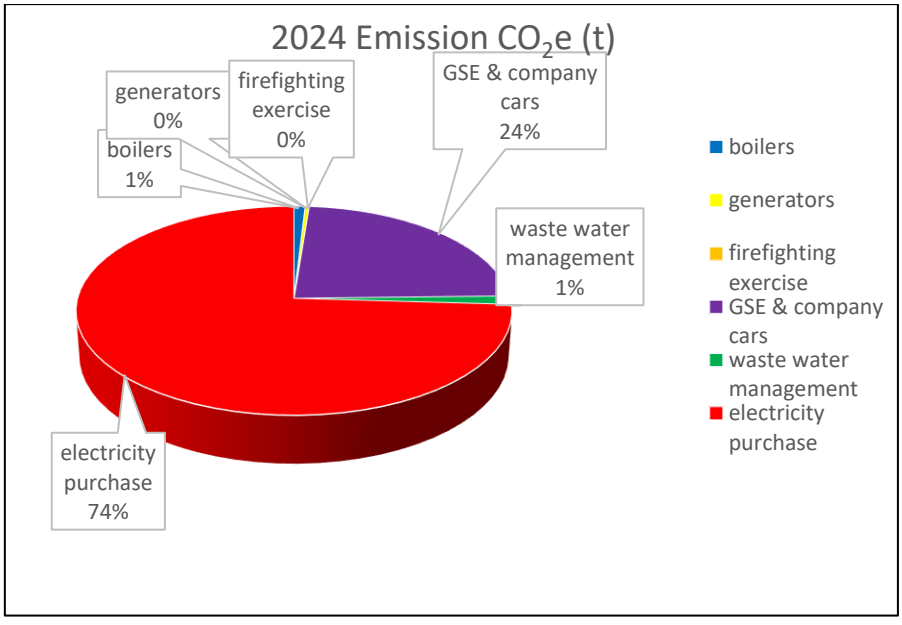

Figure 6. Percentage share for carbon emissions scope 1 – location-based

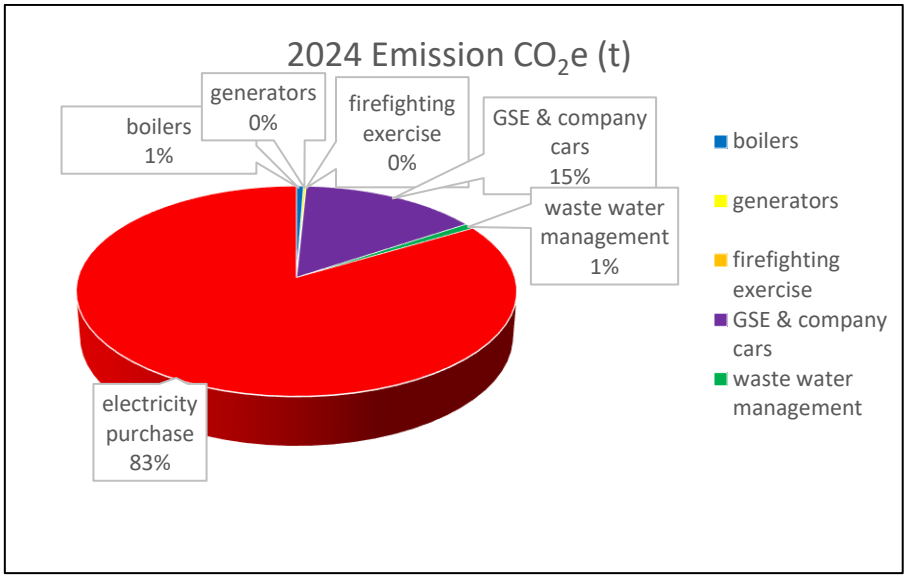

Figure 7. Percentage share for carbon emissions scope 1 – market-based

4.1 Scope 1 Emissions

In Table 4, absolute carbon emissions for Zadar Airport in 2024 have been compared to the three-year rolling average for scope 1. Although the increase in absolute tCO_2e is visible for mobile sources and process emissions, the overall scope 1 does show a decrease in tCO_2e compared to the three-year rolling average, showcasing that Zadar Airport is on the right decarbonisation path.

DIRECT EMISSIONS – SCOPE 1	**Average absolute values for 2021 – 2023 (tCO_2e)**	**Absolute values 2024 (tCO_2e)**	**Percentage increase/decrease**
Stationary sources (3 gas boilers for water heating, firefighting exercises, 2 generators at the apron)	39,81	9,69	-75,66%
Mobile sources (GSE, including burner, equipment for manual work at the apron, official vehicles)	172,99	180,61	+4,40%
Process emissions – wastewater	7,69	10,08	+31,08%
TOTAL	**220,49**	**200,38**	**-9,12%**

Table 4. 2024 absolute carbon emissions in tCO_2e for scope 1 compared to the three-year rolling average (2021-2023)

When comparing relative carbon emission values, i.e., tCO_2e emissions per passenger, a significant decrease can be seen for scope 1, as presented in Table 5. Although the number of flights and passengers has increased over the years, following an increase in carbon emissions, the relative carbon emission values showcase a decrease.

	Average relative values for 2021 – 2023 (tCO_2e per passenger)	Relative values 2024 (tCO_2e per passenger)	Percentage increase/decrease
DIRECT EMISSIONS – SCOPE 1	0,000241	0,000126	-47,72%

Table 5. 2024 relative carbon emissions in tCO_2e for scope 1 compared to the three-year rolling average (2021-2023)

4.1.1 Airport-Owned Operational Vehicles

At the end of 2023 and in 2024, Zadar Airport procured and replaced diesel-fuelled mobile ground handling equipment with electrically powered units, as follows:

- Electric towbarless tractor (pusher) vehicle, one piece.
- Remotely controlled electric aircraft pusher vehicle, one piece.
- Electric vehicles for towing baggage carts, five pieces.
- Self-propelled electric stairs, one piece.
- A bus for transporting passengers to/from the aircraft, one piece.

All equipment was put into operation in the second half of 2024. Putting new equipment into operation brought a decrease in tCO_2e in 2024 (140,10 tCO_2e) compared to the values in 2022 (155,73 tCO_2e) and 2023 (171,03 tCO_2e).

The following airport equipment is **now powered by electricity**, representing an initial step toward full electrification of ground support operations:

Category	Equipment Type	Units	Notes
Self-Propelled Stairs	FREEWAY 2438 / 2458	5	TIPS models: 111/16, /18, /19, /20, 2458/21
Pushback Tractors	TLD TPX 100 (incl. Remote)	2	Units 121/2 and 121/3
Pushback Tractor	GOLDHOFER PHOENIX E	1	Unit 121/4
Electric Forklift	JUNGHEINRICH	1	Unit 132/3
Conveyor Belts	TIPS CB1030 series	3	Units 112/3, 112/5, 112/6
Baggage Conveyor	TLD NBL-E	1	Unit 112/8
Stationary GPUs	DYNELL	10	Units 141/6 to 141/15 (note: 141/14 and /15 are both “GPU 9”)
ACU Units	COOL 15	2	Units 142/3, 142/4
Utility Vehicle	GARIA CLUB	1	Unit 022/9

The airport is committed to **transitioning all remaining fossil fuel-based equipment to ecological (electric or low-emission) alternatives**, while carefully maintaining:

- Operational functionality

- Service continuity
- Equipment compatibility with airport infrastructure and logistics

This plan aligns with global aviation sustainability goals and supports a greener, more efficient ground operation system.

4.1.2 Airport Apron

Works on implementing fixed connections for supplying electrical power to stationary aircraft with the necessary design and safety adaptations (without increasing the apron capacity) started in 2023 and finished in July 2024. Infrastructure was put into operation regardless of the identified deficiencies and unfinished work, given that the identified deficiencies and unfinished work do not affect the functionality and usability of the apron.

4.2 Scope 2 Emissions

In Table 6, absolute carbon emissions for Zadar Airport in 2024 have been compared to the three-year rolling average for scope 2. An increase can be seen in both location-based and market-based calculations. This is due to increased electricity demand for work at the airport in 2024 and an increased number of flights and passengers.

INDIRECT EMISSIONS – SCOPE 2	**Average absolute values for 2021 – 2023 (tCO_2e)**	**Absolute values 2024 (tCO_2e)**	**Percentage increase/decrease**
Location-based	434,43	572,28	+31,73%
Market-based	669,06	1.012,15	+51,28%

Table 6. 2024 absolute carbon emissions in tCO_2e for scope 2 compared to the three-year rolling average (2021- 2023)

When comparing relative carbon emission values, i.e., tCO_2e emissions per passenger, a decrease can be seen for scope 2, for both location-based and market-based calculations, as presented in Table 7. This is a good result, showing that even though the number of operations has increased, thus increasing the power demand (electricity), the relative values for tCO_2e show a decrease in location-based and market-based calculations, respectively.

INDIRECT EMISSIONS – SCOPE 2	**Average relative values for 2021 – 2023 (tCO_2e per passenger)**	**Relative values 2024 (tCO_2e per passenger)**	**Percentage increase/decrease**
Location-based	0,000536	0,000359	-33,02%
Market-based	0,000819	0,000635	-22,47%

Table 7. 2024 relative carbon emissions (per passenger) in tCO_2e for scope 2 compared to the three-year rolling average (2021- 2023)

4.2.1 On-site installation of photovoltaic powerplant

The construction of a 610kW photovoltaic powerplant took place in 2024. After installation, a trial operation of the power plant was performed and completed. The measurements confirmed that the photovoltaic power plant is correctly installed, and a permit for permanent operation can be issued. A permanent operation certificate (equivalent of a use permit) was issued in February 2025, and the photovoltaic powerplant is in full function, as of March 2025. So far, measurements for March and April show an increase in energy production (6.867,00 kWh for March, 50.480,00 kWh for April, and 62.590,00 kWh in May) (Figure 8).

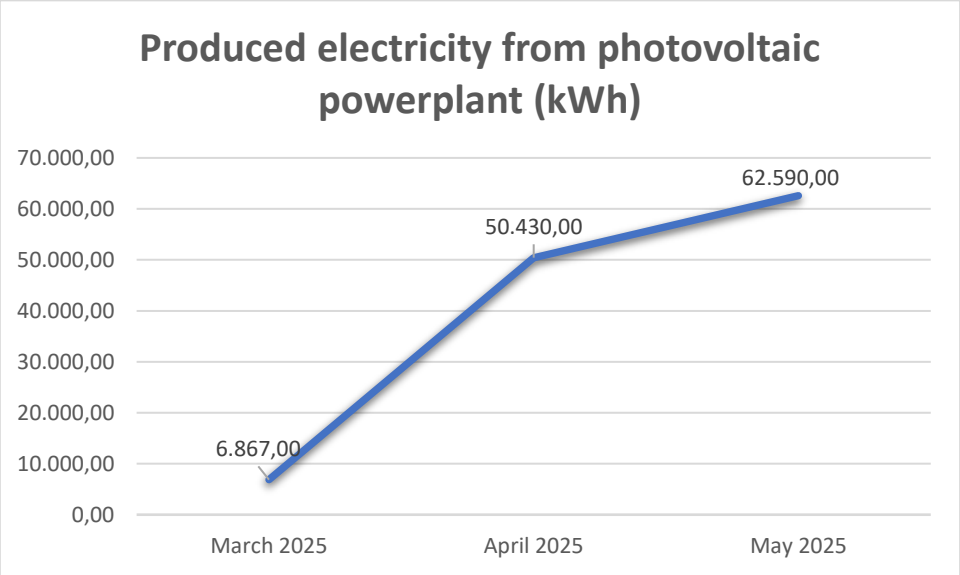

Figure 8. Produced electricity from a photovoltaic powerplant (kWh) in 2025

Since the photovoltaic powerplant was not in use in 2024, there were no decreases in the absolute value of carbon emissions. However, putting the powerplant in operation will contribute to lower carbon emissions for the purchased electricity, if not in absolute values due to the increasing number, then in relative values.

5. Future Planned Initiatives

The long-term development framework is defined in the **Zadar Airport Master Plan** (2018; revised in 2021), which outlines sub-projects for sustainable infrastructure and technological growth. Strategic objectives include:

- **Infrastructure development** – expansion of airside and landside facilities (runway, apron, fuel systems, terminal, commercial areas)
- **Technological upgrades** – improved handling of passengers, baggage, and aircraft
- **Air traffic network growth** – increasing the number of destinations and carriers
- **Service quality enhancement** – across all operational areas

	INFRASTRUCTURAL PROJECTS - PART OF GLOBAL INVESTMENT PLAN:	Estimated value	Timetable	Readiness	Impact	Source
AIR SIDE	Electrification and greening of the ground handling and power supply system with photovoltaic plan	€ 16.330.740,00	2023-2024	completed	green, safety	RRF funds
LAND SIDE	Passenger terminal building development - phase 3	€ 16.299.110,00	2024-2025	ongoing	safety, security	bank loan
AIR SIDE	Reconstruction of runway 04-22	€ 4.152.785,00	2025-2026	2025.	safety	
LAND SIDE	Passenger terminal building development with photovoltaic plant - phase 4-6	€ 172.949.092,00	2025-2027	2025.	green, quality	
AIR SIDE	Reconstruction and expansion of runway 13-31 and taxiways "A-H"– dual use civil and military + Upgrade of Instrument Landing System to CAT III	€ 87.198.670,32	2026-2028	2025.	safety	
LAND/AIR SIDE	Relocation of the administrative building, construction of hangars for equipment and of parking lots with a photovoltaic plant	€ 13.125.000,00	2026-2027	2025.	quality, green	
AIR SIDE	Fire department building with a garage for fire vehicles	€ 4.950.000,00	2026-2027	2025.	quality, green	
AIR SIDE	Reconstruction and expansion of runway 04-22 and taxiways	€ 114.754.473,98	2027-2028	2026.	safety, quality	
AIR SIDE	Rescue and emergency helicopter landing zone (HEMS)	€ 2.645.060,00	2027-2028	2026.	safety, security	
LAND SIDE	Hangars building (4) for dual use military and civil	€ 38.267.766,24	2027-2028	2027.	safety	

Infrastructural investments are a powerful lever for reducing or increasing the carbon footprint. The key is to adopt a low-carbon design and construction strategy, supported by sustainable materials, renewable energy systems, and innovative operational planning.

Passenger terminal

The primary investment that will significantly contribute to the reduction of scope 1 and scope 2 emissions is the project for the development of the Passenger Terminal Building with a photovoltaic plant – phases 4-6. The objective is to achieve high energy efficiency standards and meet the requirements for the A+ energy class, as well as the criteria for designing and constructing a nearly zero-energy building (nZEB). The use of energy-efficient design solutions is planned for the building envelope, roof, and floor (such as multi-layer glazing and thermal insulation panels in the roof), alongside mechanical systems that ensure heat recovery from exhaust air, condensing flow-through

boilers for domestic hot water preparation, photovoltaic solar panels for generating electricity from sunlight, and the installation of heat pumps as thermal-technical systems for nZEB buildings.

It is planned to implement the following solutions:

- **PRIMARY ENERGY SOURCES AND HEAT PUMPS** – The primary sources of energy include water, air, ground, solar energy, and wind energy for electricity generation. All technical systems used for heating, cooling, domestic hot water preparation, ventilation, and air conditioning are designed and implemented as combined hybrid systems with heat pumps that draw energy from the aforementioned sources. It is planned that groundwater from boreholes and electricity from the solar power plant will serve as the primary energy sources.
- **SOLAR POWER PLANT WITH MINI WIND TURBINES** – Triangular photovoltaic solar panels will be installed on each hexagonal structural module to generate electricity from the sun. Around 1,250 modules are planned, resulting in a nominal power output of approximately 1,500 kW for the solar power plant.
- **INTEGRATED HYBRID SYSTEM** – At structural module locations without a roof, vertical-axis wind turbines with a vertical rotor (H-Darrieus type) with a nominal capacity of approximately 5 kW each can be installed. For 18 such locations, this would add about 90 kW of total installed power to the solar power plant, offering additional benefits from wind energy generation and supporting complete energy independence. This hybrid combination of solar and wind energy would allow for electricity generation throughout the day. When combined with thermal-technical systems (such as heat pumps, LED lighting, etc.), it would meet all or nearly all of the airport's energy needs. Any surplus electricity would be transferred to the distribution grid via bidirectional meters to a contracted buyer.
- **LOW-TEMPERATURE HEATING AND COOLING SYSTEMS** – The primary heating and cooling system consists of low-temperature heating and high-temperature cooling. Both systems use a piping network functioning as a heat exchanger, installed in ceilings, floors, and walls. The same piping system is used for both radiant heating and cooling. Such systems provide superior thermal comfort compared to conventional heating and cooling methods.
- **MECHANICAL THERMAL VENTILATION OF SPACES** – The mechanical ventilation system of the building should include heat recovery from exhaust air with a minimum efficiency of 80%. This allows for the zoning of individual spaces to optimize use of the entire complex or specific technological zones throughout the year. All systems must achieve high reliability and safety, particularly thermal-technical installations.

Currently, the development of the Passenger Terminal Building – phase 3 is in implementation, and only a minor part of the planned solutions will be implemented. Heat pumps are foreseen for use with underfloor heating and convectors, in addition to Variable Refrigerant Volume (VRV) systems and air handling units. During this phase, the underfloor heating system will not be put into operation; only the necessary installations will be executed.

Reconstruction and expansion of runway 13-31 and taxiways "A-H"

The investment that is in the imminent phase of implementation in related to Reconstruction and expansion of runway 13-31 and taxiways "A-H". The project itself has no significant measures for emission reduction, except recycling and reuse of excavated material.

Other infrastructural projects

All other infrastructural initiatives are in a preparatory, technical planning phase (different levels of preparation), and their implementation depends on a secured financial framework. For the implementation of the planned infrastructural projects, Zadar Airport should require the use of low-carbon construction materials (e.g., low-carbon concrete, sustainable steel, and recycled materials), prioritise local materials to reduce transportation emissions, reuse onsite materials, and adopt passive design principles, implement high-efficiency systems for heating and cooling, and green infrastructure.

Some small-scale projects will be implemented to raise awareness among airport staff and passengers

Recommendations for future short and long-term initiatives

Zadar Airport has made significant strides in reducing CO_2 emissions through infrastructural investments and operational enhancements implemented in 2024. Building upon these initiatives, and keeping in mind the needed, previously cited infrastructural investments and recommendations, to further decrease the airport's carbon footprint, Zadar Airport should also consider the following initiatives:

- **Improvement of energy-efficient systems**: upgrade heating, ventilation, and air conditioning (HVAC) systems, lighting, and insulation to reduce energy consumption.
- **Additional solar installations**: utilize available rooftop and land areas for more photovoltaic panels.
- **Collaborate with airlines**: encourage SAF use by providing necessary infrastructure and incentives.
- **On-site SAF storage**: develop facilities to store and distribute SAF efficiently.
- **Rail connectivity**: prepare needed technical documentation and studies to support the extension of the Zadar-Knin rail line to the airport, and in that way to promote low-emission travel options.
- **Shuttle services**: implement electric shuttle buses connecting the airport with key city locations.
- **Afforestation and green projects**: partner with local organisations to plant trees and restore natural habitats.

By expanding upon its current initiatives and adopting these additional strategies, Zadar Airport can further solidify its commitment to environmental sustainability and serve as a model for regional airports aiming to reduce their carbon footprints.